A3 Excursus: system view

Introduction of socio-economic systems

The areas of consumption and production with the greatest effects on the environment are nutrition, housing and mobility. The environmental impacts of these systems are the result of the combined effect of values, lifestyles, social structures, market mechanisms, technologies, products and infrastructures. Nutrition, housing and mobility can only be understood as complex socio-economic systems.

In the past, Switzerland's environmental policy succeeded in resolving a series of environmental problems by imposing technical solutions on predominant impacts such as the massive water pollution in the 1950s or the high air pollutant concentrations in the 1980s. These included building wastewater treatment plants and equipping motor vehicles with catalytic converters (Walter 1995).

Today's most pressing environmental problems are greenhouse gas emissions, pollution from biocides and plant protection products, nitrogen surpluses, soil sealing, increasing pressure from the use of near-natural areas as well as resource loss outside of closed economic cycles (→ Main pressures and impacts in Switzerland). Compared to the past challenges, these challenges are far more **complicated** and each results from **more than just a single cause.**

The analysis of Switzerland's footprints shows that two-thirds of the environmental impact stems from nutrition, housing and mobility (FOEN 2018a) (→ Figure 5) (→ Production and consumption as drivers). Therefore, environmental policy needs to address these areas. However, there are no easy universal solutions. Instead, a differentiated **view of the system** (→ Figure 12), which takes into account the **interaction of values, lifestyles, social structures, markets, technologies, products and infrastructures,** is necessary (Bauknecht et al. 2015, EEA 2016). For example, **nutrition,** the area with a 28% share of the total environmental impact, is shaped by differing consumption patterns and diets on the demand side, and by the retail trade, the food industry and agriculture on the supply side.

Housing (including the construction trade, energy and water consumption, as well as waste and wastewater disposal) contributes 24% to Switzerland's environmental impact. On the one hand, it is steered by demand factors such as incomes or family situations and, on the other hand, by supply factors such as the real estate market and settlement structure.

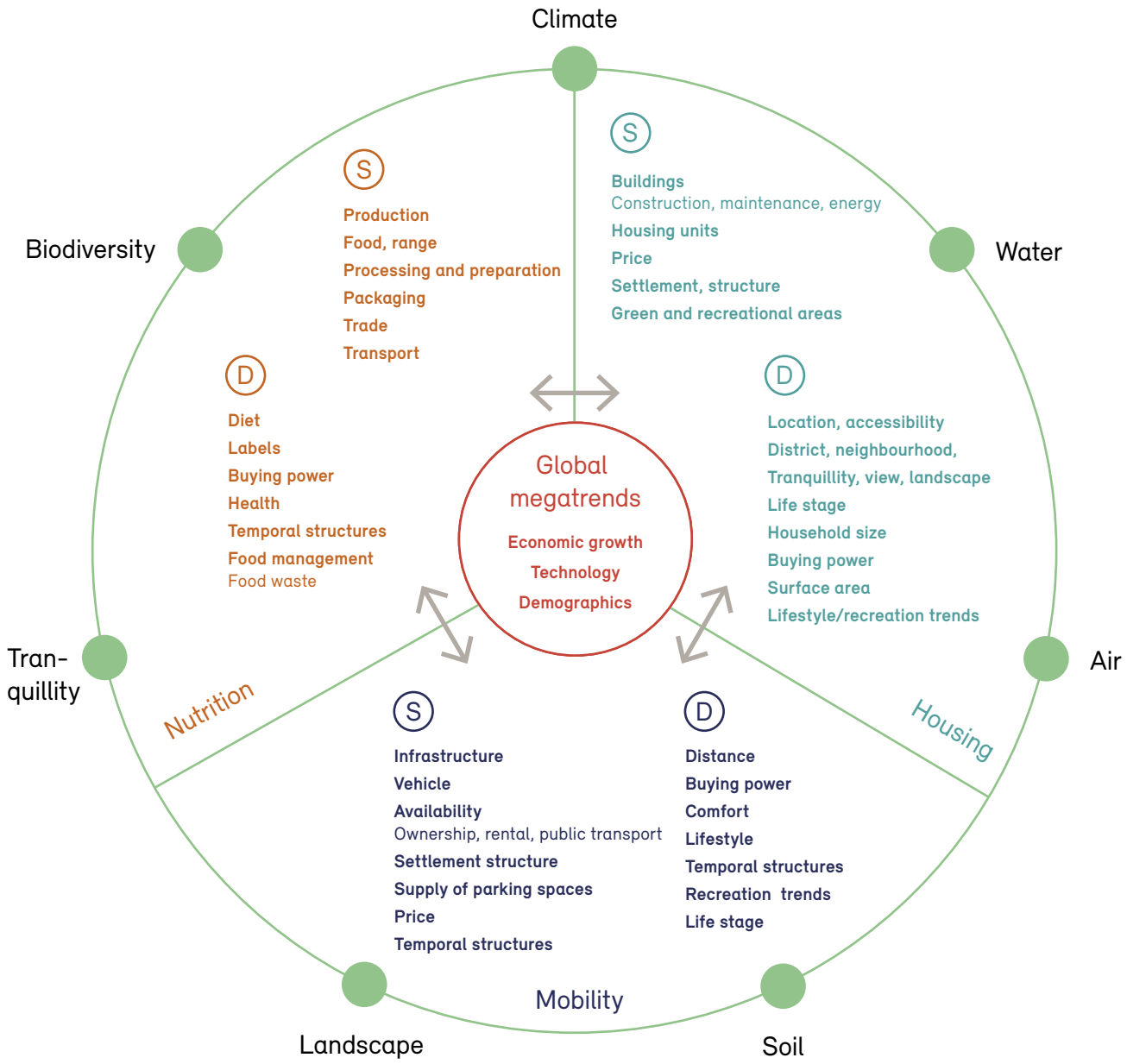
Lastly, **mobility,** which has a 12% share of Switzerland's total environmental impact both within its borders and abroad, can only be understood as a system. In this system, demand is dependent on the place of work or the place of training, and supply differs according to motor vehicle technology, infrastructure development or service quality.

All three systems are also influenced by strong drivers such as demographic developments, economic growth or digitalisation (EEA 2015b) and are extremely **interdependent upon one another.** For instance, in 2015, food transport from Switzerland and abroad was responsible for nearly one-fourth of all road transport using domestic trucks (FSO 2017i). Mobility depends essentially on the settlement structure: The further apart settlements are and the greater the distance between different supplies, the longer the routes and the more difficult effective access is by foot, bicycle or public transport. Conversely, the growth of settlement areas for living, working, recreation and other purposes occurs mainly at the expense of cultivated land, which curtails food production possibilities.

Figure 12

Socio-economic systems with the greatest environmental impact

Environmental effects caused by our nutrition (orange), mobility requirements (blue), housing and other uses in the settlement area (petrol) on climate, water, air, soil, landscape, tranquillity and biodiversity (green) are interrelated through numerous aspects of supply (S) and demand (D). Megatrends (red) such as economic growth, demographic change and technological developments influence these systems.



Source: FOEN